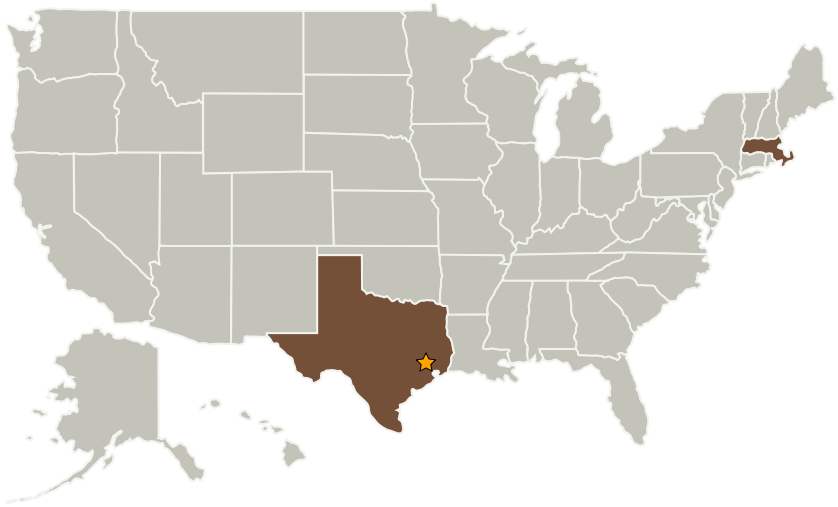
SELENE - Self-Forming Extensible Lunar EVA Network, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

The overall objective of this research effort (Phase I and Phase II) by Scientific Systems Company, Inc. and BBN Technologies is to develop the SELENE network -- SELf-forming Extensible luNar EVA network -- for specific usage in the Human Lunar Outpost. Phase I will investigate a hybrid scheme combining Mobile Ad-Hoc Networks (MANETs) and Disruption Tolerant Networks (DTNs) for networking EVA radios in the Human Lunar Outpost, study the performance of SELENE under various levels of disruption and load, and develop a prototype convergence layer adapter plug-in for an EVA radio. The SELENE effort will leverage DARPA's Survivable Policy-Influenced Networking: Disruption Tolerance through Learning and Evolution (SPINDLE) program led by BBN Technologies (BBN), which addressed DTNs from the DoD viewpoint. As a part of our research team, BBN will provide expertise in DTNs and MANETs and support the usage of their software for performance evaluation of DTNs. The SELENE effort will investigate problems which are specific to the lunar environment, such as the existence of scheduled, on-demand and predictive adjacencies among nodes, and the need for hybrid schemes which work well under all levels of disruption, combining MANET and DTN technologies in a seamless fashion.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Scientific Systems Company, Inc.	Supporting Organization	Industry Small Disadvantaged Business (SDB)	Woburn, Massachusetts

Primary U.S. Work Locations	
Massachusetts	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Joao Cabrera

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems